

REMARKS

This amendment responds to the office action mailed June 16, 2003. In the office action the Examiner:

- withdrew claims 32-36 from consideration as being drawn to a non-elected invention;
- rejected claims 17-24 and 29-31 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 3,041,230 to Diehl (hereinafter "Diehl") in view of U.S. Patent No. 5,965,262 to Whisler et al. (hereinafter "Whisler") and optionally further taken with U.S. Patent No. 5,445,693 to Vane (hereinafter "Vane");
- rejected claims 24-28 under 35 U.S.C. § 103 as being unpatentable over Diehl, Whisler and Vane further taken with either one of U.S. Patent No. 4,800,113 to O'Connor (hereinafter "O'Connor") or WO 97/26397 (hereinafter "PCT '397");

Presented for the Examiner's review and consideration are claims 17, 19-31, as amended and new claim 37.

Elections/Restrictions

Applicant affirms the provisional election to prosecute the invention of Group I, claims 17-31 and does so with traverse. Accordingly, claims 32-36, which the Examiner indicated as being drawn to a non-elected invention, are canceled with traverse. Applicant does however argue that Group I and III (claim 36) should be considered together. The Examiner indicated that Group I and III are directed to distinct inventions because the process as claimed could be used to make a materially different product than that of group III. Contrary to the Examiner's assertion, applicant contends that a composite sheet having a shrinkage of less than 6 percent alone would not render a product that is materially different than that produced by the claimed process. Claim 36 is provided as previously presented for the Examiner's consideration. If the Examiner does not agree with Applicant's position, claim 36 is hereby canceled.

Rejection under 35 U.S.C. § 103(a)

Claims 17-24 and 29-31

Claims 17-24 and 29-31 were rejected under 35 U.S.C. § 103 as being unpatentable over Diehl in view of Whisler and optionally further taken with Vane for reasons set forth on pages 4-5 of the Office Action. Specifically, the Examiner asserted that

Whisler suggests that those skilled in the art at the time the claimed invention was made would have known to utilize thermoplastic filaments and reinforcing filaments in the assembly in order to join the warps together and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the joining techniques for the laps of Whisler in the operation of Diehl for making a composite sheet material. (Office Action of 6/16/03 at 3-4). Applicant respectfully traverses the rejection.

Claims 17 and 30 have been amended so as to incorporate the content of previously presented claim 18 and further recite a method of manufacturing a composite sheet comprising, *inter alia*, providing a bundle of threads, combining a lap of threads, heating the combination wherein at least one of the bundle of parallel threads or the lap of threads comprises, “at least one *thermoplastic* organic material . . . wherein the combination of threads comprises at least 10 percent of the *thermoplastic* organic material.” (emphasis added). No new matter is believed to have been added as the amendment is fully supported by the application as filed at page 4, line 24. Diehl is directed to a non-woven fabric machine and method for producing a non-woven fabric comprising substantially of parallel strands of yarn to which a polymerizeable resin may be applied and cured under heat and pressure (thermosetting resin). (See Diehl, 1:8-11; 4:22-36). As the Examiner also correctly noted, Diehl does not, “mention the use of commingled filaments of thermoplastic and reinforcement in the operation.” (Office Action of 6/16/03 at 4).

Whisler, directed to a reinforcement mat, discloses the use of “commingled reinforcing and polymer fiber strands,” as was cited by the Examiner in the Office Action. (*Id.* at 5 (citing Whisler at 7:39-8:3)). From the disclosure of Whisler, the Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the joining techniques for the laps of Whisler in the operation of Diehl for making a composite sheet material. (See *id.* at 5).

As the Examiner is well aware, to establish a *prima facie* case of obviousness, there must be a suggestion or motivation to combine reference teachings. See MPEP § 2143 at 2100-124 to -125. The teaching or suggestion to make the claimed combination must be found in the prior art. *Id.* (citing *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991)). Applicant contends that none of the references cited by the Examiner teach or suggest the claimed combination of currently amended claims 17 and 30. Neither the disclosure of Diehl nor the disclosure of Whisler provide a motivation to combine or modify Diehl with Whisler. In particular, neither Diehl nor Whisler disclose or suggest that the thermosetting resin of Diehl may be substituted for with the thermoplastic and reinforcing filaments of Whisler. Although

Diehl discloses the use of a thermoplastic resin sheet in place of warp 60, (See Diehl, 7: 57-59), there is nothing to suggest that the thermoplastic sheet may substitute for or play the same role as the thermosetting resin. “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” MPEP § 2143.01 at 2100-126 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)); see also *id.* at 2100-125 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

Moreover, it should be noted that Diehl discloses the use of liquid polymeric material into which the warps may be introduced. (See Diehl, 5:42-49). According to Diehl, the polymerizable material, “may be any material which may be polymerized to form a synthetic resin; for most purposes it is preferable that a resin formed by polymerizing this material *be flexible*.” (*Id.*, 5: 66-70) (emphasis added). In addition, Diehl adopts the following definition of fabric, ‘Any thing manufactured; in modern use: *a* Cloth that is woven or knit from fibers, either *vegetable or animal*; as silk, or other fabrics. *b* Any similar material.’ (*Id.*, 1:33-40) (emphasis added) (citation omitted). Whisler discloses the use of reinforcing fibers used to form mats used in “printed circuit boards, skis, rail car tanks, boat hulls and the like.” (See Whisler, 1: 19-21). According to Whisler, the synthetic fibers used may be formed from materials such as, “carbon or graphite, a *metallic or ceramic material* and other non-glass man-made materials having suitable *reinforcing* characteristics.” (See *id.* 7:29-36) (emphasis added). Arguably, the disclosure of using reinforcing fibers, including those of ceramic or metallic material, in Whisler teach away from the non-woven fabric method of Diehl.

The Examiner cites to Vane as further evidence that those skilled in the art of composite manufacture would have know to incorporate thermoplastic fibers within the reinforcement filaments of Diehl as suggested by Whisler. (Office Action of 6/16/03 at 6). However, as shown above, absent the suggestion or motivation to modify the operation of Diehl so as to substitute the thermosetting resin of Diehl with the commingled filaments of thermoplastic and reinforcement from Whisler, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests withdrawal of the rejection.

Claims 24-28

Claims 24-28 were rejected under 35 U.S.C. § 103 as being unpatentable over Diehl in view of Whisler, optionally with Vane when further taken with either one of O'Connor and PCT '397. (Office Action of 6/16/03 at 6). Specifically, the Examiner

asserted that both O'Connor and PCT '397 both suggest that chopped commingled strands would have been used in the manufacture of composite sheeting, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the chopped filaments within the assemblies of Diehl in combination with Whisler and optionally Vane. (*Id.*) As shown above, absent the suggestion or motivation to modify the operation of Diehl with the commingled filaments of thermoplastic and reinforcement from Whisler, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests withdrawal of the rejection.

New Claims

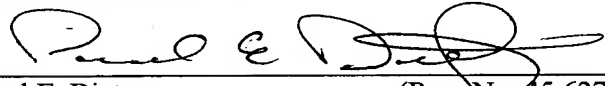
New Claim 37 is presented for the Examiner's review and consideration. Independent claim 37 recites a method of manufacturing composite sheets comprising, *inter alia*, providing a first bundle of parallel threads, combining the bundle of parallel threads with a lap of thread(s), to provide a woven combination of threads. In addition to the arguments presented above, the new claims define over the references cited by the Examiner because Diehl is specifically directed to a non-woven fabric machine and method. No new matter is believed to have been introduced by the addition of claim 37.

Conclusion

No fee is believed due for entry of this amendment. The Commissioner is hereby authorized to charge any required fee(s) to Pennie & Edmonds LLP Deposit Account No. 16-1150. In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (202) 496-4460, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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